

CLAIMS

We claim:

1 [0400] 1.(currently amended) A ~~nano-structure~~ composition comprising a nano-particle core
2 and a ~~nano-shell~~ nano-structure formed an outer surface of the core, where the nano-particle core
3 comprises a first conductive material and the ~~nano-shell~~ structure comprises a second conductive
4 material, where the first and second conductive materials are the same or different.

[0401] 2.(canceled)

[0402] 3.(canceled)

[0403] 4.(canceled)

[0404] 5.(canceled)

[0405] 6.(canceled)

[0406] 7.(canceled)

[0407] 8.(canceled)

[0408] 9.(canceled)

[0409] 10.(canceled)

1 [0410] 11.(original) A nano-structure composition comprising a nano-particle core and a plurality
2 of nano-rods, where the nano-particle core comprises a first material and the nano-rods comprises
3 a first conductive material.

1 [0411] 12. The composition of claim 11, further ~~A nano-structure composition~~ comprising a
2 ~~nano-particle core~~, a nano-shell interposed between the core and the nano-rods ~~and a plurality of~~
3 ~~nano-rods~~, where the ~~nano-particle core~~ comprises a first material, the nano-shell comprises a first
4 ~~conductive material~~ and the ~~nano-rods~~ comprise a second conductive material, where the first and
5 second conductive materials are the same or different.

[0412] 13.(canceled)

[0413] 14.(canceled)

[0414] 15.(canceled)

[0415] 16.(canceled)

[0416] 17.(canceled)

[0417] 18.(canceled)

[0418] 19.(canceled)

[0419] 20.(canceled)

[0420] 21.(canceled)

[0421] 22.(canceled)

[0422] 23.(canceled)

[0423] 24.(canceled)

[0424] 25.(canceled)

[0425] 26.(canceled)

[0426] 27.(canceled)

[0427] 28.(canceled)

[0428] 29.(canceled)

[0429] 30.(canceled)

1 [0430] 31.(new) The composition of claim 1, wherein the nano-structure is selected from the
2 group consisting of a nano-shell, a plurality of nano-rods and a nano-shell having a plurality of nano-
3 rods disposed on a surface of the nano-shell, where the nano-rods comprise a third conductive
4 material, where the first, second and third conductive materials are the same or different.

1 [0431] 32.(new) The composition of claim 1, wherein the first conductive material comprises
2 a first metal, metal alloy or a conductive polymer and the second conductive material comprises a
3 second metal or metal alloy.

1 [0432] 33.(new) The composition of claim 31, wherein the first conductive material comprises
2 a first metal, metal alloy or a conductive polymer, the second conductive material comprises a
3 second metal or metal alloy, and the third conductive material comprises third metal or metal alloy,
4 where the first, second and third metals and/or metal alloys are the same or different.

1 [0433] 34.(new) The composition of claim 32, wherein the first, second and third metals or
2 metal alloys are the same or different noble metals or metal alloys, where the noble metal are

selected from the group consisting of gold, silver, platinum, palladium, iridium, osmium, ruthenium, rhodium, and mixtures or combinations thereof.

[0434] 35.(new) The composition of claim 33, wherein the first, second and third metals or metal alloys are the same or different noble metals or metal alloys, where the noble metal are selected from the group consisting of gold, silver, platinum, palladium, iridium, osmium, ruthenium, rhodium, and mixtures or combinations thereof.

[0435] 36.(new) The composition of 1, wherein the first metal and first metal alloy are selected respectively from the group consisting of non-transition metals, non-transition metal alloys, transition metals, transition metal alloys, lanthanide metals, lanthanide metal alloys, actinide metals, and actinide metal alloys.

[0436] 37.(new) The composition of 31, wherein the first metal and first metal alloy are selected respectively from the group consisting of non-transition metals, non-transition metal alloys, transition metals, transition metal alloys, lanthanide metals, lanthanide metal alloys, actinide metals, and actinide metal alloys.

[0437] 38.(new) The composition of 1, wherein the nano-structure has a plasmon resonance having a frequency range at least a portion of which lies in the near infrared region of the electromagnetic spectrum.

[0438] 39.(new) The composition of 31, wherein the nano-structure has a plasmon resonance having a frequency range at least a portion of which lies in the near infrared region of the electromagnetic spectrum.

[0439] 40.(new) A nano-structure composition comprising a nano-particle core, a nano-structure formed an outer surface of the core and a bio-compatible polymer coating the structure and the core, where the nano-structure is selected from the group consisting of a nano-shell, a plurality of nano-rods and a nano-shell having a plurality of nano-rods disposed on a surface of the nano-shell, where the nano-particle core comprises a first material, the nano-shell comprises a second conductive

material, and the nano-rods comprise a third conductive material, where the second and third conductive materials are the same or different.

[0440] 41.(new) The composition of claim 40, wherein the first material is a non-conductive material, a semi-conductor material or a conductive material.

[0441] 42.(new) The composition of claim 41, wherein the first conductive material comprises a first metal, metal alloy or a conductive polymer, the second conductive material comprises a second metal or metal alloy, and the third conductive material comprises third metal or metal alloy, where the first, second and third metals and/or metal alloys are the same or different.

[0442] 43.(new) The composition of claim 42, wherein the first, second and third metals or metal alloys are the same or different noble metals or metal alloys, where the noble metal are selected from the group consisting of gold, silver, platinum, palladium, iridium, osmium, ruthenium, rhodium, and mixtures or combinations thereof.

[0443] 44.(new) The composition of 41, wherein the first metal and first metal alloy are selected respectively from the group consisting of non-transition metals, non-transition metal alloys, transition metals, transition metal alloys, lanthanide metals, lanthanide metal alloys, actinide metals, and actinide metal alloys.

[0444] 45.(new) The composition of claim 40, wherein the nano-structure has a plasmon resonance having a frequency range at least a portion of which lies in the near infrared region of the electromagnetic spectrum.

[0445] 46.(new) A nano-structure drug-delivery composition comprising a nano-particle core, a nano-structure, a bio-compatible polymer coating and a pharmaceutically active agent impregnated into the polymer coating, where the nano-structure is selected from the group consisting of a nano-shell, a plurality of nano-rods and a nano-shell having a plurality of nano-rods disposed on a surface of the nano-shell, where the nano-particle core comprises a first material, the nano-shell comprises a second conductive material, and the nano-rods comprise a third conductive material, where the

7 second and third conductive materials are the same or different.

1 [0446] 47.(new) A nano-structure drug-delivery composition comprising a nano-particle core,
2 a nano-structure formed on an outer surface of the core, and a pharmaceutically active agent
3 absorbed or attached thereto, where the nano-structure is selected from the group consisting of a
4 nano-shell, a plurality of nano-rods and a nano-shell having a plurality of nano-rods disposed on a
5 surface of the nano-shell, where the nano-particle core comprises a first material, the nano-shell
6 comprises a second conductive material, and the nano-rods comprise a third conductive material,
7 where the second and third conductive materials are the same or different.

1 [0447] 48.(new) A method for treating cancers or diseases comprising:
2 administering a composition to an animal including a human and
3 exposing the composition to an electromagnetic, magnetic, electrical and/or ultrasonic field
4 so that the nano-structures convert the field into thermal energy,
5 where the composition comprises a nano-particle core, a nano-structure formed an outer
6 surface of the core and a bio-compatible polymer coating the structure and the core or a
7 pharmaceutically active agent absorbed or attached thereto, where the nano-structure is selected from
8 the group consisting of a nano-shell, a plurality of nano-rods and a nano-shell having a plurality of
9 nano-rods disposed on a surface of the nano-shell, where the nano-particle core comprises a first
10 material, the nano-shell comprises a second conductive material, and the nano-rods comprise a third
11 conductive material, where the second and third conductive materials are the same or different.